

July 12, 2004

**SUBJECT: Comprehensive Nutrient Management Plans (CNMPs) –
Guidance Document and Memorandum of Understanding**

**TO: Employees of the Tennessee Farm Service Agency and
Natural Resources Conservation Service**

This guidance document has been developed jointly by the Farm Service Agency (FSA) and the Natural Resources Conservation Service (NRCS). It establishes the guidelines for development of Comprehensive Nutrient Management Plans (CNMPs) for FSA lending. It is for use by applicants for FSA Services and existing borrowers.

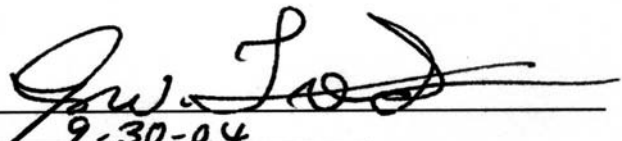
The following guidelines have been established and agreed upon by both FSA and NRCS regarding eligible producers with FSA direct and guaranteed loans.

- 1. Potential FSA borrowers must be in compliance with Highly Erodible Land (HEL) and Wetland Conservation provisions. Applicants must sign a current FSA form AD-1026 (if not already on file) with FSA certifying they are in compliance with the highly erodible land and wetland conservation provisions of the 1985 Food Security Act as amended. If the AD-1026 indicates potential wetland impact, applicants must sign NRCS form CPA-38 requesting a certified wetland determination. The determination results will be provided to FSA in writing and the applicant on form NRCS-CPA-026. If the applicant intends to purchase land not currently under their control, the seller would need to make a request with an AD-1026 and CPA-038 (when applicable). FSA borrowers are required to have and be carrying out an approved conservation compliance plan on HEL after ownership is established. If potential non-compliance is suspected, a request for status review will be furnished to FSA and the borrower. Persons found not actively applying a conservation compliance plan will be ineligible for USDA benefits until reinstating according to handbook 6-CP and the National Food Security Act Manual. NRCS will work with those out of compliance to obtain reinstatement as soon as possible.**
- 2. Lending institutions (including FSA) requiring a CNMP for a potential borrower must make a written request to the NRCS for this assistance. The requesting letter must state that a signed CNMP is required in order to approve a loan for the potential borrower. The letter will state that best management practices associated with development of the CNMP must be implemented and documented in order for the loan to be guaranteed.**

3. FSA requires a site specific CNMP for animal feeding operations as a part of a complete application and prior to loan approval. To meet this requirement, applicant cooperation and participation will be necessary. The CNMP is developed based upon the deliverables listed in the current Statement of Work (SOW) for CNMPs available from NRCS's electronic Field Office Technical Guide (<http://www.nrcs.usda.gov/technical/efotg/>) under Section IV. The SOW specifies what the deliverables are for developing a CNMP. More specifically, NRCS form TN-CPA-CNMP is used to begin the development of a CNMP. It will be used to gather preliminary information about an animal feeding operation.
4. NRCS will develop CNMPs only on land owned or under the control of the person requesting the plan. If a person requesting a CNMP does not have control of sufficient acreage for land application of the manure, litter, and/or other organic byproducts, NRCS will not develop a CNMP until the applicant has either obtained sufficient acreage or arranged for hauling by a third party who is willing to sign an Operation and Maintenance agreement specifying what the requirements are for manure, litter and/or other organic byproducts application. Information in the agreement at minimum should include those requirements listed in the Tennessee Department of Environment and Conservation Rules, Permit Effluent Limitations and Standards, Chapter 1200-4-5-.14, Appendix A.
5. **Attachment A demonstrates a procedure that can be used to determine how much land is needed to properly utilize manure/litter from an operation. The applicants farming operation will be evaluated by NRCS with regard to how much land is needed to properly utilize manure/litter from the operation. The resulting NRCS recommendations will be used as a guide by FSA to evaluate the feasibility of an operation. Applicant/borrower's without sufficient land area for the application of the manure/litter and/or other organic byproduct or sufficient off site application land resources will be provided the information in Attachment A to evaluate nutrient management scenarios and issues for their operation.**
6. FSA will determine if a feasible plan of operation, including costs and impacts of implementing the CNMP can be developed. If a feasible plan cannot be developed, the application for financial assistance will be rejected in accordance with FSA regulation and the applicant provided appeal rights.
7. CNMPs that meet NRCS FOTG standards can be developed by person certified to develop CNMPs, usually the local NRCS District Conservationist or a Technical Service Provider (TSP). Qualifications to become certified are listed in NRCS General Manual Title 180, Part 409 Conservation Planning Policy.

8. CNMP requests received by NRCS for FSA direct and guaranteed loans will be processed as follows.
- NRCS will maintain a log documenting the date of all CNMP requests. A CNMP request will be logged when NRCS form NRCS TN-CPA-CNMP is complete and all the necessary information within the form is supplied. This form is available at (<http://www.nrcs.usda.gov/technical/efotg/>) under Section IV. Proper completion of this form along with other attachments to the form will establish priority for the request.
9. FSA will continuously monitor the progress and status of implemented conservation systems for FSA borrowers as part of loan processing and servicing functions and promptly notify NRCS in writing of any suspected or apparent compliance deficiencies. FSA will also maintain official USDA records relative to farms, tracts, fields and cropping history of the producers who participate in certain USDA programs.
10. FSA will, upon receipt of this memorandum of understanding, provide to the local NRCS office a master list of all FSA applicants requiring a CNMP in the area(s) served by that office. FSA will provide NRCS with the names of new applicants on a routine basis as needed.
11. Guidance contained in this document is effective with the latest signature date below.

By: 
Date: 9-30-04
LOUIS E. BUCK
State Executive Director
Farm Service Agency

By: 
Date: 9-30-04
JAMES W. FORD
State Conservationist
Natural Resources Conservation Service

ATTACHMENT A

EXAMPLE FOR ESTIMATING LAND NEEDED TO UTILIZE POULTRY LITTER

GIVEN

Animals: 25,000 birds; 3.2 avg. wt. (1 house)

Byproduct: Poultry Litter (165 tons of litter per year for 1 house)

Litter Analysis: 60 lbs of N, 60 lbs of P_2O_5 , and 50 K_2O per ton

Soil Test Analysis: Medium for P_2O_5 , Medium for K_2O .

Crop: Hay (grass)

Land Needed:

165 tons x 60 lbs of P_2O_5 per ton divided by UT recommended 30 lbs of P_2O_5 (Hay-grass with medium soil test from Table 1) = 330 acres of Hay (grass) needed to balance on P_2O_5 .

Likewise to balance on N, assume 50 % of N is plant available, then 60 lbs of N per ton x 50% divided by UT recommended 60 lbs of N (as per fall application) equals approximately 83 acres needed to balance on N.

Therefore for **1 broiler house** (25,000 birds; 3.2 avg. wt.), a hay crop, and utilizing UT fertilizer recommendations:

- 83 acres are needed to balance based on Nitrogen (N).
- 330 acres are needed to balance based on Phosphate (P_2O_5).
- 275 acres are needed to balance based on Potash (K_2O).

ATTACHMENT A (continued)

Table 1 - University of Tennessee's Standard Fertilizer Recommendations for Field Crops
Nitrogen, Phosphate, and Potash recommendations based on Soil Test
(Recommendations are given in pounds per acre of N, P₂O₅, and K₂O)

	Nitrogen Application		Phosphate Application When Soil Test Indicates:				Potash Application When Soil Test Indicates:			
	Planting or Seeding	Total N Top-dressed	Low	Med.	High	V H	Low	Med.	High	V H
Alfalfa Establishment Maintenance ¹	0-15 -	- 0	150 80	60 60	40 40	0 0	240 240	190 190	135 135	0 0
Bermudagrass Establishment Common or Hybrids ²	30	30	80	40	20	0	80	40	20	0
Bermudagrass Maintenance Common Pasture ³	-	60-180	60	40	20	0	120	80	40	0
Hybrid/Improved Pasture ³	-	120-180	60-90	40-60	20-30	0	120-180	80-120	40-60	0
Hybrid/Improved Hay ⁴	-	120-400	60-120	40-80	20-40	0	120-240	80-160	40-80	0
Canola/Rape	30	110	30	0	0	0	30	0	0	0
Corn ⁵										
For Grain										
100-125 bu.	120	-	100	50	25	0	100	50	25	0
125-150 bu.	150	-	120	60	30	0	120	60	30	0
150-175 bu.	180	-	140	70	35	0	140	70	35	0
175-200 bu.	210	-	160	80	40	0	160	80	40	0
200-225 bu.	240	-	180	90	45	0	180	90	45	0
For Silage										
15-18 tons	120	-	120	60	40	0	180	120	80	0
19-25 tons	150	-	160	80	60	0	240	160	100	0
> 25 tons	180	-	200	100	80	0	300	200	120	0
Cotton ⁶	30-80	-	90	60	30	0	120	90	60	0
Grain Sorghum	60-90	-	60	30	20	0	60	30	20	0
Annual Lespedeza	0	-	40	20	0	0	40	20	0	0
Pasture, Hay or Silage Estab. or Renovation ⁷	30	-	90	60	30	0	90	60	30	0
Maintenance ⁸										
Pasture (Grass-Clover) ⁹	-	0-30	60	30	0	0	60	30	0	0
Pasture (Grass) ¹⁰	-	45-105	60	30	0	0	60	30	0	0
Hay (Grass-Clover) ¹¹	-	30-60	60	30	0	0	60	30	0	0
Hay (Grass) ¹²	-	60-165	60	30	0	0	60	30	0	0
Timothy/Orchardgrass ¹³	-	60-120	60	30	0	0	60	30	0	0
Sm. Gr./Ryegrass ¹⁴	30-60	60-120	80	40	20	0	80	40	20	0
Sm. Gr./Ryegrass/Leg. ¹⁵	15-30	30-90	80	40	20	0	80	40	20	0
Summer Annual Grasses ¹⁶	60	0-60	60	30	30	0	90	60	30	0
Red Clover										
Establishment	0-15	-	90	60	30	0	90	60	30	
Maintenance	-	0	60	30	0	0	60	30	0	0
Sericea										
Establishment	0	-	60	20	0	0	60	20	0	0
Maintenance	-	0	40	20	0	0	40	20	0	0
Grain Sorghum Silage or Silage Sorghum Hybrids	90	-	120	60	40	0	180	120	80	0
Small Grain for Grain	15-30	30-60	80	40	0	0	40	20	0	0
Small Grain followed by Soybeans ¹⁷	15-30	30-60	90	60	0	0	120	60	0	0
Soybeans ¹⁸	0	-	40	20	0	0	80	40	0	0
Tobacco ¹⁹										
Burley or Dark	150-200	-	150	90	60	0	300	180	120	0

ATTACHMENT A

Table 1. (continued)

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- 1/ Apply annually in late fall or winter after first production season. Apply 2 pounds boron per acre annually.
 - 2/ For establishment of Bermuda grass, apply 30 pounds N at sprigging and 30 pounds one month later.
 - 3/ On established stands, the rate of N topdressing depends on the need for forage. Apply one-half of the N May 1 and one-half July 1. If the higher rates of N are used, use the higher rates of phosphate and potash on the hybrid pastures.
 - 4/ The rate of nitrogen top dressing depends on the need for forage. Apply 60 to 100 pounds of nitrogen May 1 and again after each cutting when conditions favor regrowth. Four cuttings are often possible. If the higher rates of N are used then use the higher rates of P and K when the soil test shows a need for P and K. P and K may all be applied in either the fall or spring in one application.
 - 5/ Follow soil test recommendations when zinc is determined. In lieu of soil test use 5 pounds zinc (approx. 15 lbs. zinc sulfate) per acre when pH is 6.1 or above and phosphorus is high or anytime lime is applied in the following counties: Bedford, Cannon, Coffee, Cumberland, Davidson, DeKalb, Fentress, Franklin, Giles, Grundy, Jackson, Lincoln, Macon, Marshall, Maury, Moore, Morgan, Overton, Putnam, Robertson, Sumner, Trousdale, Warren, Williamson and Wilson. Five pounds zinc per acre should be applied anywhere deficiencies were observed the previous year.
 - 6/ Use 30 to 60 pounds of nitrogen per acre on bottom soils and 60 to 80 pounds on upland soils. Use 1/2 lb. of boron per acre when the pH is above 6.0 or anywhere lime is used.
 - 7/ If renovation involves the addition of legumes to grass pasture or hay, the nitrogen should be omitted.
 - 8/ Apply phosphate and potash once each year. Apply nitrogen in fall and spring where additional growth is needed in the fall and spring. If growth is only needed during one season, apply nitrogen for that season only. For best growth, apply fall applications August 15 to September 15 and spring applications March 1 to March 30.
 - 9/ The nitrogen should be omitted on pastures containing more than 30 percent clover in the spring, otherwise if clover is less than 30 percent of the pasture apply 30 lbs. of nitrogen per acre between March 1-30. For fall stockpiling of fescue apply 60 lbs. of N per acre August 15 to September 15 to all fescue-clover mixtures.
 - 10/ Apply 45 lbs. of nitrogen August 25 to September 15 and from March 1 to March 30. If additional growth is only seeded during one season, apply nitrogen for that season only. Increase the fall rate to 60 lbs. of N per acre August 15 to September 15.
 - 11/ Apply 30 lbs. of N per acre March 1-30 and again after the first cutting if an additional cutting is expected. For fall stockpiling of fescue apply 60 lbs. of N per acre August 15 to Sept. 15 to all fescue clover mixtures.
 - 12/ Apply 60 lbs. of N per acre March 1-30. Where a second cutting is expected apply an additional 45 lbs. of N per acre immediately after the first cutting. If fescue is stockpiled in the fall, apply 60 lbs. of N per acre August 15 to Sept. 15.
 - 13/ Where one cutting is made, apply 60 lbs. of N per acre March 15 to April 1. When more than one cutting is made, apply another 60 lbs. of N per acre immediately after the first cutting.
 - 14/ For fall grazing apply 60 lbs. of nitrogen per acre at time of seeding. For fall and spring grazing, apply an additional 45 lbs. of N per acre about March 1 and 45 lbs. April 15. For fall grazing and spring hay or silage, apply 60 lbs. of N per acre at seeding and 60 lbs. N March 1-15. For spring hay or silage only, apply 45 lbs. N per acre at seeding and 60 lbs. March 15. Where ryegrass is in the mixture and an additional cutting is expected in the spring, apply an additional 60 lbs. of N per acre immediately after the first cutting. For spring grazing only, apply 30 lbs. of N per acre at seeding and 45 lbs. March 1 and 45 lbs. April 15.
 - 15/ For fall grazing apply 30 lbs. of N per acre at time of seeding. For fall and spring grazing apply an additional 30 to 45 lbs. of N per acre about March 1 and again April 15. Use the 45 pound rate when the mixture contains less than 30 percent clover in the spring. For fall grazing and spring hay or silage apply 30 lbs. of N per acre at seeding and 30 to 45 lbs. N per acre March 1-15. For spring hay or silage only, apply 15 lbs. of N at seeding and 30 to 45 lbs. of N per acre March 1-15. Where ryegrass is in the mixture and an additional cutting is expected in the spring, apply an additional 30 to 45 lbs. of N per acre immediately after the first cutting. In each case, the 45 lbs. N rate is used instead of the 30 lb rate when the mixture contains less than 30 percent clover in the spring.
 - 16/ Summer annual grasses included are sudangrass, pearl millet, and forage sorghum hybrids. Apply 60 lbs. of N per acre at time of seeding. If pearl millet and forage sorghum hybrids are seeded before June 20, apply an additional 60 lbs. of nitrogen per acre as topdressing after harvest in July. If urea is the nitrogen source for topdressing, some loss of nitrogen may occur if applied to moist soils followed by three or more days of rapidly drying conditions without rainfall. Apply only 30 lbs. of nitrogen per acre at seeding for soybeans and millet hay.
 - 17/ Apply 15 to 30 lbs. N and the phosphate and potash at the seeding of wheat. Apply 30-60 lbs. of nitrogen on the wheat as a topdressing in the spring.
 - 18/ Treat seed with 0.2 oz. molybdenum per bushel when soil pH is 6.5 or below. Apply either 1/2 oz. of sodium molybdate per bushel or follow the product label for hopper-box applied sources containing fungicides.
 - 19/ Use only sulfate of potash for both burley and dark-fired tobacco.

The TENTATIVE RECOMMENDATIONS GIVEN ARE TO BE CONSIDERED AS GUIDES ONLY. Information on the cropping history, pasture fertilization, the turning under of green manure crops, the use of animal manures, etc., may indicate the need for a different fertilization program. The suggestions contained herein should give good to high yields depending upon the management level.

ATTACHMENT A (continued)

Table 2 - Estimated Crop Nutrient Removal Values according to NRCS's Agricultural Waste Management Field Handbook, Chapter 6.

CROP	Quantity	N	P2O5	K2O
Grain crops (bushels)				
Barley	50	44	19	12
1 T. straw	1	15	5	30
Corn	100	90	36	27
	120	108	43	32
	140	126	50	38
	160	144	58	43
	180	162	65	48
	200	180	72	54
	220	198	79	59
	240	216	87	65
	260	234	94	70
	280	252	101	75
	300	270	108	81
Oats	80	50	20	15
	90	56	23	17
2 T. straw	2	25	15	80
Rye	30	35	10	10
	40	47	13	13
	50	58	17	16
	60	70	20	20
	70	82	23	23
	80	93	27	26
	90	105	30	30
1.5 T. straw	1.5	15	8	25
Sorghum	60	56	28	17
	70	65	32	20
	80	75	37	23
	90	84	42	25
	100	94	46	28
	110	103	51	31
3 T. stover	3	65	21	94
Wheat	40	50	34	15
	50	62	43	19
	60	75	51	22
	70	87	60	26
	80	100	68	30
	90	112	77	34
	100	125	86	37
	110	137	94	41
1.5 T. straw	1.5	20	5	35
Oil crops (bushels or lbs)				
Rapeseed	35	63	32	16
3 T. straw	3	269	59	243
Soybeans	30	113	26	41
	40	150	35	55
	50	188	44	68
	60	225	53	82
	70	263	62	96
	80	300	71	109
	90	338	79	123
	100	375	88	137
Sunflower (lbs)	1100	39	43	15
Fiber crops (lbs of lint + lbs of seed)				
Cotton (600 lb lint per ac.)	1600	43	21	16
Cotton (700 lb lint per ac.)	1867	50	25	19
Cotton (800 lb lint per ac.)	2133	57	28	21
Cotton (900 lb lint per ac.)	2400	64	32	24
Cotton (1000 lb lint per ac.)	2667	71	36	27

CROP	Quantity	N	P2O5	K2O
Forage crops (tons)				
Alfalfa	4	180	40	180
	4.5	203	46	202
	5	225	51	224
	5.5	248	56	247
	6	270	61	269
	6.5	293	66	292
Big bluestem	3	59	117	126
	3.5	69	137	147
	4	79	156	168
	4.5	89	176	189
	5	99	196	210
Birdsfoot trefoil	3	149	30	131
Bluegrass-pastd.	2	116	40	94
Bromegrass	5	187	48	306
Clover-grass	6	182	75	243
Dallisgrass	3	115	28	124
Bermudagrass	8	301	70	269
	9	338	79	302
	10	376	87	336
	11	414	96	370
Indiangrass	3	60	117	86
Lespedeza	3	140	29	76
Little bluestem	3	66	117	104
	3.5	77	137	122
	4	88	156	139
	4.5	99	176	157
	5	110	196	174
Orchardgrass	6	176	55	311
Red clover	2.5	100	25	100
Reed Canarygrass	6.5	176	54	56
Ryegrass	3	100	37	102
	3.5	117	43	119
	4	134	50	136
	4.5	150	56	153
	5	167	62	170
Switchgrass	3	69	14	137
Tall fescue	3	118	28	144
	3.5	138	32	168
	4	158	37	192
	4.5	177	41	216
	5	197	46	240
Timothy	2.5	60	25	95
Wheatgrass	1	28	12	64
Silage crops (tons)				
Alfalfa haylage (50% dm)	10	279	76	278
Corn silage (35% dm)	20	155	104	149
Forage sorghum (30% dm)	20	173	52	147
Oat haylage (40% dm)	10	128	52	90
Sorghum-sudan (50% dm)	10	136	37	174
Tobacco (lbs)				
	2000	75	15	120
	2250	84	17	134
	2500	94	19	149
	2750	105	21	165
Turfgrasses (tons)				
Bluegrass	2	116	40	94
Bentgrass	2.5	155	47	133
Bermudagrass	4	150	35	134

ATTACHMENT A (continued)

Table 3 - Nutrient Content of Animal Manures Available After Application

Management System	Total Nutrients ^{1/} Pounds per ton					
	Incorporated ^{2/}			Surface Applied		
	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
FEEDER BEEF						
1. Fresh manure collected and applied daily	9	5	9	7	5	9
2. Manure collected daily, stored in covered tank, applied semi-annually	7	5	9	6	5	9
3. Bedded manure pack under roof, cleaned, and applied in spring (7.5% bedding)	5	4	8	4	4	8
4. Open lot manure pack, cleaned, and applied in spring	7	7	14	6	7	14
5. Manure collected and stockpiled outside from 4 to 6 weeks	7	9	10	6	9	10
DAIRY COWS						
1. Fresh manure collected and applied daily	7	3	6	6	3	6
2. Manure collected daily, 30% processing water added, stored in covered tank, and applied semi-annually	4	2	5	3	2	5
3. Bedded manure pack under roof, cleaned, and applied in spring (10% bedding)	4	3	6	3	3	6
4. Open lot manure pack, cleaned, and applied in spring	7	7	14	6	7	14
5. Manure collected and stockpiled outside from 4 to 6 weeks	7	9	10	6	9	10
POULTRY						
1. Broiler manure in sawdust or shavings cleaned yearly	50	54	36	40	54	36
2. Broiler manure in sawdust or shavings, cleaned yearly and temporarily stored	44	54	36	34	54	36
3. Table Egg Type, Hens & Replacements						
Undercage (fresh)	22	28	18	14	28	18
High Rise (stored)	27	50	27	18	50	27
5. Dead bird compost	39	38	32	27	38	32
SWINE						
1. Fresh manure collected and applied daily, no dilution	9	8	10	7	8	10
2. Manure collected in covered storage tank, diluted with 50% additional water, applied every 3 to 6 months	4	5	7	3	5	7
3. Manure collected in ventilated storage pit under slotted floor, diluted with 50% additional water, applied every 3 to 6 months	3	3	5	2	3	5
4. Open lot storage removed and applied in spring	6	11	14	5	11	14
LIQUID WASTE^{1/}	Total Nutrients^{1/} Pounds/ 1000 gallons					
	Incorporated^{2/}			Surface Applied		
	N	P₂O₅	K₂O	N	P₂O₅	K₂O
1. Swine Lagoon (anaerobic), Surface Liquid only	3	2	4	2	2	4
2. Swine Lagoon (anaerobic), Sludge	25	52	77	20	52	77
3. Beef and Dairy Lagoon (anaerobic), Surface Liquid only	2	1	5	2	1	5
4. Poultry Lagoon (anaerobic), Surface Liquid only	6	2	11	5	2	11
5. Poultry Waste Storage Pond, Sludge Agitated	16	22	5	13	22	5

1/ After application losses & mineralization. It is highly preferred that plant available nutrients be based on laboratory analysis.

2/ Nutrients available to crops where manure application occurs continuously (4 out of 5 years). To obtain the amount of plant available nitrogen that is available for fields that rarely receive manure (1 out of 5 years), multiply number in Table 3 by 0.80.